



Dart Hawkesbury  
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada  
Tel (613) 632-5200  
Fax 613 632-5246

# Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
PO041198	MES002-VC	1	1	Net 60	MT-1144-R4.000	1144 Steel Proof Round Bar 4.000" MATERIAL: AISI 1144 STRESSPROOF STEEL ROUND BAR ASTM A311 or UNS G11440				2	10/11/2018	2		S119930	Stock	10/18/2018	\$ 229.15 / ft	1		\$458.30	Metaux Solutions
		2			MT-1144-R5.000	1144 Steel Proof Round Bar 5.000" MATERIAL: AISI 1144 STRESSPROOF STEEL ROUND BAR ASTM A311 or UNS G11440						2		S119931	Stock	10/18/2018	\$ 476.35 / ft	1		\$952.70	Metaux Solutions
		3			MT-01-R3.000	AISI 01 Tool Steel Round Bar 3.000" DIA. Material: AISI 01 TOOL STEEL ROUND BAR DIN 1.2510 or B.S. BO 1 or SAE J437 or SAE J438 or UNS T31501 or ASTM A681				3		3		S119932	Stock	10/18/2018	\$ 72.53 / ft	1		\$217.60	Metaux Solutions
		4			MT-4140QT-R4.500	AISI 4140 Quenched & Tempered Steel Round Bar 4.500" Dia. ; MATERIAL: AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT						3		S119933	Stock	10/18/2018	\$ 130.00 / ft	1		\$349.44	Metaux Solutions
										Total:		10								\$1,516.40	



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

# PURCHASE ORDER

## PO041198

**Supplier:** MES002-VC  
Metaux Solutions  
2625 boul Jacques-Cartier Est  
Longueuil  
QC  
J4N 1L7 Canada  
Phone: 800 558 8858  
Fax: 514 633 8044

**PO No:** PO041198

**PO Date:** 10/1/18

**Due Date:** 10/11/18

**Purchase Order**

**Revision:**

**Revision Date:**

**Ship-To Contact:** Lavoie, Chantal  
clavoie@dartaero.com

**E-MAILED**  
OCT 03 2018

**Ship To:** 1270 Aberdeen Street  
Hawkesbury  
ON  
K6A 1K7 Canada  
Phone: 613-632-5200

**Via:** Ground

**Pynt Terms:** Net 60

**Freight Terms:**

**Special Comments:** BID: 29293

### Items

Line Item	Job	Part	Supplier Part No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1 A		MT-1144-R4.000	CR444	1144 Steel Proof Round Bar 4.000"  MATERIAL: AISI 1144 STRESSPROOF STEEL ROUND BAR  ASTM A311 or UNS G11440	Firmed	-	10/11/18	2 ft	0 ft	2 ft	\$229.15/ft	\$458.30
2 A		MT-1144-R5.000	CR544	1144 Steel Proof Round Bar 5.000" : MATERIAL: AISI 1144 STRESSPROOF STEEL ROUND BAR  ASTM A311 or UNS G11440	Firmed	-	10/11/18	2 ft	0 ft	2 ft	\$476.35/ft	\$952.70
3 A		MT-O1-R3.000	TR301	AISI O1 Tool Steel Round Bar 3.000" DIA. Material: AISI O1 TOOL STEEL ROUND BAR DIN 1.2510 or B.S. BO 1 or SAE J437 or SAE J438 or UNS T31501 or ASTM A681	Firmed	-	10/11/18	3 ft	0 ft	3 ft	\$72.53333/ft	\$217.60



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Hawkesbury, ON  
K6A 1K7  
Canada

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# PURCHASE ORDER

## PO041198

Items												
Line Item	Job	Part	Supplier Part No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
4		MT-4140QT-R4.500	MR41241H	AISI 4140 Quenched & Tempered Steel Round Bar 4.500" Dia. : MATERIAL: AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT	Firmed	-	10/11/18	3.16 ft	0 ft	3 ft	\$130.00/ft	\$410.80
											Grand Total: \$2,039.40	

### Order Notes

#### Procurement Quality Clauses

A005 right of entry  
A012 chemical and physical test report  
A016 personnel qualification  
A017 raw material identification (as applicable)  
A026 certification of material conformance  
A041 quality management system  
A042 dart notification by supplier  
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

Plex 10/1/18 11:53 AM dart.lavoie.chantal

METAUX SOLUTIONS INC  
2625 BOUL JACQUES CARTIER EST  
LONGUEUIL, QUEBEC  
J4N 1L7 **Tel.:** 450 641-3330

Bid 27/09/2018 29293

**Sales Rep.:** JEROME PRIMEAU  
**Reference:** CHANTAL  
**Expiration Date:** 26/12/2018

**Customer:** 6323336

DART AEROSPACE LTD  
1270, ABERDEEN STREET  
HAWKESBURY, ONTARIO  
K6A 1K7

**Ship To :**

Same

**Tel.:** 1 613 632-3336

Item No.	Description	Qty	Price	Total	Tx
	***** FACTURER E-MAIL ***** SUPER IMPORTANT SUR LE PACKING SLIP INSCRIRE LES HEAT N				
SR344	<del>304 ROU .750 DIA</del> <del>3 X 12' R/L</del> <del>HT</del>	36	7.60	273.60	A
DT7818	<del>MS TUB .875 X .125 SMLS</del> <del>1 X 17/24' R/L</del> <del>HT;</del>	20	4.20	84.00	A
DT118	<del>MS TUB 1.000 X .120 WALL DOM</del> <del>5 X 17/24' R/L</del> <del>HT;</del>	100	3.25	325.00	A
MR13441H	<del>4140 HTSR ROU 1.750 DIA</del> <del>1 X 12' PAS DE 1.625"</del> <del>HT;</del>	12	26.65	319.80	A
MR241H	<del>4140 HTSR ROU 2.000 DIA</del> <del>1 X 72"</del> <del>HT;</del>	6	29.50	177.00	A
MR41241H	4140 HTSR ROU 4.500 DIA ✓ 1 X 27.5" AS IS 1 X 11.54É2 AS IS HT;	3.16	130.00	410.80	A
SR112174	<del>17-4PH ROU 1.500 DIA COND. H1150</del> <del>1 X 12' R/L</del> <del>HT;</del>	12	62.75	753.00	A
SR2174	<del>17-4PH ROU 2" DIA COND. H1150</del> <del>1 X 12' R/L</del>	12	98.15	1 177.80	A

\*\*\* Continued on Next Page \*\*\*

METAUX SOLUTIONS INC  
 2625 BOUL JACQUES CARTIER EST  
 LONGUEUIL, QUEBEC  
 J4N 1L7 *Tel.* : 450 641-3330

Bid 27/09/2018 29293

*Sales Rep.* : JEROME PRIMEAU  
*Reference* : CHANTAL  
*Expiration Date* : 26/12/2018

*Customer* : 6323336

DART AEROSPACE LTD  
 1270, ABERDEEN STREET  
 HAWKESBURY, ONTARIO  
 K6A 1K7

*Ship To* :

Same

*Tel.*: 1 613 632-3336

<i>Item No.</i>	<i>Description</i>	<i>Qty</i>	<i>Price</i>	<i>Total</i>	<i>Tx</i>
CR444	HT; 1144 STRESSPROOF 4.000 DIA 1 X 24"	2	229.15	458.30	A
CR544	HT; 1144 STRESSPROOF 5.000 DIA, 1 X 24"	2	476.35	952.70	A
TR201	O-1 TFA TO FIN 2 RD 1 X 36"	34	3.75	127.50	A
TR301	O-1 TFA TO FIN 3 RD 1 X 36"	75	3.75	281.25	A
	5/7 JOURS				

*Subtotal* 5 340.75

A) Regist :

HST : 694.30

*Total* : 6 035.05

## Chantal Lavoie

---

**From:** Chantal Lavoie  
**Sent:** Thursday, September 27, 2018 9:37 AM  
**To:** 'd.quenneville@acierouellette.com'  
**Subject:** quote

Good morning Denis,  
Please advise price an delivery on mat'l.

~~304 round bar 0.750" x 36 ft~~ ✓

~~A513 round tubing 0.875" x 0.120" wall x 20 ft~~ ✓

~~A513 round tubing 1" x 0.120" wall x 100 ft~~ ✓

~~4140 qt round bar 1.625" x 12 ft~~ ✓

~~4140 qt round bar 2" x 6 ft~~ ✓

~~4140 qt round bar 4.5" x 3 ft~~ ✓

~~17-4 H1150 round bar 1.5" x 12 ft~~ ✓

~~17-4 H1150 round bar 2" x 12 ft~~ ✓

*not required -*

~~1144 round bar 4" x 2 ft~~ ✓

~~1144 round bar 5" x 2 ft~~ ✓

~~O1 round bar 2" x 3 ft~~ ✓

~~O1 round bar 3" x 3 ft~~ ✓

Thanks  
Chantal

**Chantal Lavoie**  
Purchasing Coordinator

DART AEROSPACE  
T 1 613 632-5200  
F 1 613 632-1053  
E [clavoie@dartaero.com](mailto:clavoie@dartaero.com)  
1 800 556-4166  
[www.dartaerospace.com](http://www.dartaerospace.com)



## Shipping Order

12/10/2018

IETAUX SOLUTIONS INC  
325 BOUL JACQUES CARTIER EST  
ONGUEUIL, QUEBEC  
4N 1L7  
Tel.: 450 641-3330

Order : 138600  
Reference : 41198  
Ship : PICK UP / PICK UP

Customer : 6323336

## Ship To

DART AEROSPACE LTD  
1270, ABERDEEN STREET  
HAWKESBURY, ONTARIO  
K6A 1K7

Same

Tel.: 1 613 632-3336

Item No.	Description	Qty	Qty. Delivered	B/O Qty
	***** FACTURER E-MAIL ***** SUPER IMPORTANT SUR LE PACKING SLIP INSCRIRE LES HEAT N			
DR444	1144 STRESSPROOF 4.000 DIA 1 X 24" ***** ✓ HT, C144390 M	2	2	✓
DR544	1144 STRESSPROOF 5.00 DIA 1 X 24" ***** ✓ HT, C144394 M	2	2	✓
TR301	O-1 TFA TO FIN 3 RD , 1 X 36" ✓ HT, 991703650B-48-4 M	75	75	✓
MR41241H	4140 HTSR ROU 4.500 DIA 1 X 27.5" ✓ HT, C141805 ✓ LIVRE JP	2.29	2.29	✓



Shipping : \_\_\_\_\_

Ref. : \_\_\_\_\_

Package No : \_\_\_\_\_

Merchandise Received: \_\_\_\_\_



# CERTIFICATE OF TEST CERTIFICAT D'ESSAIS

Page 01 of 02

Certification Date  
10-OCT-2018

CUSTOMER ORDER NUMBER  
NUMÉRO DE COMMANDE DU CLIENT

Invoice Number  
S712069

45598-J  
PART NUMBER/NUMÉRO DE PIÈCE  
501821

<b>SOLD TO:</b> METAUX SOLUTIONS INC.	<b>SHIP TO:</b> METAUX SOLUTIONS (RIVE-SUD)
<b>VENDU À:</b> 2625 BOUL JACQUES CARTIER EST	2625 BOUL JACQUES CARTIER EST
LONGUEUIL QC J4N 1L7	LONGUEUIL QC J4N 1

Description: **STRESSPROOF** CF BAR ASTM A311 CL B  
4 RD S/C 2'0" (24.0") Line Total: 85.54 LB  
HEAT: **C144390** ITEM: 501821

Specifications:  
ASTM A108 13 **ASTM A311 CL B 15** ASTM A29/A29M 15

## CHEMICAL ANALYSIS

C	MN	P	S	SI	NI	CR	MO
0.45	1.44	0.0090	0.269	0.28	0.06	0.10	0.02
CU	AL	V	N	PB	B	NB	
0.17	0.002	0.005	0.0090	0.001	0.0006	0.001	

RCPT: R485771

COUNTRY OF ORIGIN : USA

## MECHANICAL PROPERTIES

DESCRIPTION	YLD STR PSI	ULT TEN PSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
	119373.0	132208.0	10.4	28.8	262

IDEAL DIAMETER : 2.36 IN

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination. /Les informations ci-haut-mentionnées sont transcrites du certificat d'essais du manufacturier après vérification de l'état complet des spécifications inscrites sur le certificat. We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description. /Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes. /Les informations fausses, fictives ou frauduleuses en rapport avec le résultat des essais sont punissables en vertu des lois fédérales.

Material did not come in contact with mercury while in our possession. /Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES



MANAGER QUALITY ASSURANCE  
GÉRANT DE L'ASSURANCE QUALITÉ



# CERTIFICATE OF TEST CERTIFICAT D'ESSAIS

Page 02 of 02

CUSTOMER ORDER NUMBER  
NUMÉRO DE COMMANDE DU CLIENT

Certification Date  
10-OCT-2018

Invoice Number  
S712069

45598-J  
PART NUMBER/NUMÉRO DE PIÈCE  
501821

<b>SOLD TO:</b>	METAUX SOLUTIONS INC.	<b>SHIP TO:</b>	METAUX SOLUTIONS	(RIVE-SUD)
<b>VENDU À:</b>	2625 BOUL JACQUES CARTIER EST LONGUEUIL QC J4N 1L7	<b>EXPÉDIÉ À:</b>	2625 BOUL JACQUES CARTIER EST LONGUEUIL QC J4N 1	

Description: STRESSPROOF« CF BAR ASTM A311 CL B  
4 RD S/C 2'0" ( 24.0")  
HEAT: C144390  
ITEM: 501821  
Line Total: 85.54 LB

MATERIAL IS FREE FROM MERCURY CONTAMINATION  
NO WELD REPAIR PERFORMED ON MATERIAL

## COMMENTS

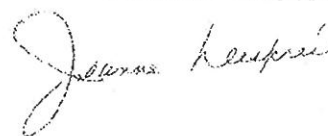
reduction ratio 9.9:1  
source/melt: usa

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Material did not come in contact with mercury while in our possession./Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES



MANAGER QUALITY ASSURANCE  
GÉRANT DE L'ASSURANCE QUALITÉ

## SPECIFICATION CONTROL DRAWING

REV	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.08.09	VM	VM

201.09.12

PURCHASE MATERIAL : AISI 1144 STRESSPROOF STEEL ROUND BAR  
SPECIFICATION: ASTM A311 of UNS G11440  
PART NUMBER: MT-1144-R [D.DDD]  
WHERE "D.DDD" = DIAMETER IN INCHES  
EG. 5/8" ROUND BAR = MT-1144-R0.625

<b>DART</b> AEROSPACE Manufacturing, Ontario, Canada	
TITLE AISI 1144 STRESSPROOF STEEL ROUND BAR	
DESIGN:	MT-1144-R
DESIGN BY:	VM 08/2017
CHECKED:	SAC 08/21/2017
MG. APPR:	DP 08/31/2017
QA APPR:	PD 08/31/2017
APPROVED:	VM 09/05/2017
DATE:	8/31/2017
SCALE:	NIS WEIGHT 0.0 LBS
SHEET 1 OF 1	
COPYRIGHT © 2013 BY DART AEROSPACE LTD.	
THIS DRAWING IS THE PROPERTY OF DART AEROSPACE LTD. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.	

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M7-1144-R4.000  
 DATE: 18/10/19

PO / BATCH NO.: P0041198/5119930

MATERIAL CERT REC'D: Yes  
 QUANTITY RECEIVED: 254  
 QUANTITY INSPECTED: 254  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 4.000"  
 THICKNESS RECEIVED: 4.000"  
 SHEET SIZE ORDERED: —  
 SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <u>N</u>	
CORRECT FINISH	<u>Y</u> N	
CORROSION	Y <u>N</u>	
CORRECT GRAIN DIRECTION	<u>Y</u> N	
CORRECT MATERIAL PER M-DRAWING	<u>Y</u> N	ASTM A311
CORRECT THICKNESS	<u>Y</u> N	
PHOTO REQUIRED	Y <u>N</u>	
CORRECT REF # TO LINK CERT	<u>Y</u> N	MT: C144390
CORRECT MATERIAL IDENTIFICATION	<u>Y</u> N	
CORRECT M# ON THE MATERIAL	<u>Y</u> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <u>N</u>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <u>N</u>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/10/19</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

# CERTIFICATE OF TEST CERTIFICAT D'ESSAIS

Page 01 of 01

CUSTOMER ORDER NUMBER  
NUMÉRO DE COMMANDE DU CLIENT

Certification Date  
10-OCT-2018

45598-J  
PART NUMBER/NUMÉRO DE PIÈCE  
526220

Invoice Number  
T384705

<b>SOLD TO:</b> METAUX SOLUTIONS INC.	<b>SHIP TO:</b> METAUX SOLUTIONS (RIVE-SUD)
<b>VENDU À:</b> 2625 BOUL JACQUES CARTIER EST	<b>EXPÉDIÉ À:</b> 2625 BOUL JACQUES CARTIER EST
LONGUEUIL QC J4N 1L7	LONGUEUIL QC J4N 1

Description: 1144 CF BAR JDM A0 QL-2  
5 RD S/C 2'0" ( 24.0")

HEAT: C144394 ITEM: 526220

Line Total: 133.66 LB

Specifications:

JDM A0 QL-2  
ASTM A576 14

ASTM A108 13

ASTM A29 16

## CHEMICAL ANALYSIS

C	MN	P	S	SI	CU	NI	MO
0.43	1.40	0.008	0.2510	0.29	0.16	0.05	0.02
CR	AL	CB	N	V			
0.07	0.002	0.001	0.0096	0.004			

RCPT: R475948

COUNTRY OF ORIGIN : USA

MATERIAL IS FREE FROM MERCURY CONTAMINATION  
NO WELD REPAIR PERFORMED ON MATERIAL

## COMMENTS

reduction ratio 5:1  
country of origin: usa

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Material did not come in contact with mercury while in our possession./Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES



MANAGER QUALITY ASSURANCE  
GÉRANT DE L'ASSURANCE QUALITÉ



(Viewing data as-entered. [Click here](#) to return)**AISI 1144 Steel, as rolled****Categories:** [Metal](#); [Ferrous Metal](#); [Carbon Steel](#); [AISI 1000 Series Steel](#); [Medium Carbon Steel](#)**Material Notes:** Applications include cold drawn or finished bar, cold punched nuts, split rivets, machine screws, and wood screws.**Key Words:** UNS G11440, ASTM A29, ASTM A108, ASTM A311, FED QQ-S-637 (C1144), SAE J403, SAE J412, SAE J414**Vendors:** [Click here](#) to view all available suppliers for this material.Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Original Value	Comments
Density	7.87 g/cc	Typical for steel.

Mechanical Properties	Original Value	Comments
Hardness, Brinell	212	
Hardness, Knoop	235	Converted from Brinell
Hardness, Rockwell B	94	Converted from Brinell
Hardness, Rockwell C	16	Converted from Brinell hardness. Value below normal HRC range, for comparison purposes only.
Hardness, Vickers	223	Converted from Brinell
Tensile Strength, Ultimate	705 MPa	
Tensile Strength, Yield	420 MPa	
Elongation at Break	21 %	
Reduction of Area	41 %	
Modulus of Elasticity	200 GPa	Typical for steel
Bulk Modulus	160 GPa	Typical for steel.
Poissons Ratio	0.29	Typical For Steel
Shear Modulus	80.0 GPa	Typical for steel.
Izod Impact	43.0 J	normalized at 900°C (1650°F)
	53.0 J	as rolled
	65.0 J	annealed at 815°C (1500°F)

Electrical Properties	Original Value	Comments
Electrical Resistivity	0.0000170 ohm-cm @Temperature 20.0 °C	condition of specimen unknown


Thermal Properties	Original Value	Comments
CTE, linear	11.5 µm/m-°C @Temperature 20.0 °C	Typical steel
	12.2 µm/m-°C @Temperature 0.000 - 300 °C	Typical for steel
	13.9 µm/m-°C @Temperature 0.000 - 500 °C	Typical for steel
Specific Heat Capacity	0.472 J/g-°C	Typical steel
Thermal Conductivity	51.9 W/m-K	Typical steel

Component Elements Properties	Original Value	Comments
Carbon, C	0.40 - 0.48 %	
Iron, Fe	97.5 - 98.01 %	As remainder
Manganese, Mn	1.35 - 1.65 %	

REV.	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.08.09	VM	WM

OK 2017.09.12

PURCHASE MATERIAL : AISI 1144 STRESSPROOF STEEL ROUND BAR  
SPECIFICATION: ASTM A311 or UNS G11440  
PART NUMBER: MT-1144-R [D.DDD]  
WHERE "D.DDD" = DIAMETER IN INCHES  
EG. 5/8" ROUND BAR = MT-1144-R0.625

		Headquarters, Ontario, Canada	
TITLE AISI 1144 STRESSPROOF STEEL			
ROUND BAR			
PART MT-1144-R		SIZE 1"	
SPECIFICATION		SECTION	
DESIGNATION	YM 83/2017	XX 1	XX 2
QUANTITY	1	XX 3	XX 4
DATE	03/12/2017	XX 5	XX 6
DESIGNED BY	SAC 003/12/2017	XX 7	XX 8
DATE	03/12/2017	XX 9	XX 10
DESIGNED BY	PD 003/12/2017	XX 11	XX 12
DATE	03/12/2017	XX 13	XX 14
DESIGNED BY	PD 003/12/2017	XX 15	XX 16
DATE	03/12/2017	XX 17	XX 18
DESIGNED BY	PD 003/12/2017	XX 19	XX 20
DATE	03/12/2017	XX 21	XX 22
DESIGNED BY	PD 003/12/2017	XX 23	XX 24
DATE	03/12/2017	XX 25	XX 26
DESIGNED BY	PD 003/12/2017	XX 27	XX 28
DATE	03/12/2017	XX 29	XX 30
DESIGNED BY	PD 003/12/2017	XX 31	XX 32
DATE	03/12/2017	XX 33	XX 34
DESIGNED BY	PD 003/12/2017	XX 35	XX 36
DATE	03/12/2017	XX 37	XX 38
DESIGNED BY	PD 003/12/2017	XX 39	XX 40
DATE	03/12/2017	XX 41	XX 42
DESIGNED BY	PD 003/12/2017	XX 43	XX 44
DATE	03/12/2017	XX 45	XX 46
DESIGNED BY	PD 003/12/2017	XX 47	XX 48
DATE	03/12/2017	XX 49	XX 50
DESIGNED BY	PD 003/12/2017	XX 51	XX 52
DATE	03/12/2017	XX 53	XX 54
DESIGNED BY	PD 003/12/2017	XX 55	XX 56
DATE	03/12/2017	XX 57	XX 58
DESIGNED BY	PD 003/12/2017	XX 59	XX 60
DATE	03/12/2017	XX 61	XX 62
DESIGNED BY	PD 003/12/2017	XX 63	XX 64
DATE	03/12/2017	XX 65	XX 66
DESIGNED BY	PD 003/12/2017	XX 67	XX 68
DATE	03/12/2017	XX 69	XX 70
DESIGNED BY	PD 003/12/2017	XX 71	XX 72
DATE	03/12/2017	XX 73	XX 74
DESIGNED BY	PD 003/12/2017	XX 75	XX 76
DATE	03/12/2017	XX 77	XX 78
DESIGNED BY	PD 003/12/2017	XX 79	XX 80
DATE	03/12/2017	XX 81	XX 82
DESIGNED BY	PD 003/12/2017	XX 83	XX 84
DATE	03/12/2017	XX 85	XX 86
DESIGNED BY	PD 003/12/2017	XX 87	XX 88
DATE	03/12/2017	XX 89	XX 90
DESIGNED BY	PD 003/12/2017	XX 91	XX 92
DATE	03/12/2017	XX 93	XX 94
DESIGNED BY	PD 003/12/2017	XX 95	XX 96
DATE	03/12/2017	XX 97	XX 98
DESIGNED BY	PD 003/12/2017	XX 99	XX 100

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M7-1144-R5.000  
 DATE: 18/10/26

PO / BATCH NO.: P041198/SL19931

MATERIAL CERT REC'D: Yes  
 QUANTITY RECEIVED: 24  
 QUANTITY INSPECTED: 24  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 5.000"  
 THICKNESS RECEIVED: 5.000"  
 SHEET SIZE ORDERED: —  
 SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	<input checked="" type="radio"/> N	
CORRECT FINISH	<input checked="" type="radio"/> Y	N	
CORROSION	Y	<input checked="" type="radio"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="radio"/> Y	N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="radio"/> Y	N	ASTM A108
CORRECT THICKNESS	<input checked="" type="radio"/> Y	N	
PHOTO REQUIRED	Y	<input checked="" type="radio"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="radio"/> Y	N	M7: C144394
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="radio"/> Y	N	
CORRECT M# ON THE MATERIAL	<input checked="" type="radio"/> Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="radio"/> Y	<input checked="" type="radio"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	<input checked="" type="radio"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT 18/10/26</u>	SIGNED OFF BY: <u>K. [Signature]</u>
DATE: <u>18/10/26</u>	DATE: <u>26 OCT 2018</u>

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



CERTIFICAT D'ANALYSE

DART AEROSPACE LTD  
1270, ABERDEEN STREET  
HAWKESBURY, ONTARIO  
K6A 1K7

12 oct. 2018

DESCRIPTION OF MATERIAL

Heat No	Lot	Grade and Size of Material
991703650B	48 4	01 TFA TO FIN 3 RD

MECHANICAL PROPERTIES

Quantity	Yield PSI	Tensile PSI	% Elong In.	% Red Area	Hardness	Impact
282 LBS	0	0	0	0	BHN206	

CHEMICAL PROPERTIES

C	MN	P	S	SI	NI	CR	V	W	MO	CU	CO	AL
0.940	1.040	0.021	0.003	0.250		0.510	0.080	0.530				
N	PB	SN										

NOTES

ASTM A881-08  
MELTING PROCESS EAF+LF+VOD  
ULTRASONIC TEST OK ACCORDING TO SEP 1921, (DEC.84) E/e  
MATERIAL FREE FROM MERCURY CONTAMINATION  
NO WELD REPAIR PERFORMED

Country of Origin: China

ITEM 3: 1 X 36"

COMMANDE : 138600

REF : 41198

Métaux Solutions inc. certifie que les analyses sur ce document sont exactes et que le matériel rencontre les spécifications énumérées.

Préparé par



## SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI O1 TOOL STEEL ROUND BAR

SPECIFICATION:  
DIN 1.2510 or B.S. BQ 1 or  
SAE J437 or SAE J438  
or UNS T31501 or ASTM A681

PART NUMBER:  
MT-O1-R [D.DDD]  
WHERE "D.DDD" = DIAMETER IN INCHES  
EG. 5/8" ROUND BAR = MT-O1-R0625

REV.	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.08.09	VM	WM

<b>DART</b> AEROSPACE Hemel Hempstead, Herts, UK	
Title: AISI O1 TOOL STEEL ROUND BAR	
Drawing No. MT-O1-R	
REV. A	
DESIGN BY: VM 8/03/2017	CHKD: VM 8/03/2017
DRAWN BY: VM 08/31/2017	CHKD: VM 08/31/2017
CHECKED: SAC 08/31/2017	CHKD: VM 08/31/2017
MFG. APPR: DP 09/05/2017	CHKD: VM 09/05/2017
QA APPR: PO 09/12/2017	CHKD: VM 09/12/2017
APPROVED: VM 09/12/2017	CHKD: VM 09/12/2017
DATE: 8/31/2017	SCALE: NTS WEIGHT N/A LBS
COPYRIGHT © 2017 BY DART AEROSPACE LTD	
THIS DRAWING IS THE PROPERTY OF DART AEROSPACE LTD. IT IS TO BE USED ONLY FOR THE PURPOSES SPECIFIED HEREIN. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.	

EN 17-19

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-01-R3.000  
 DATE: 18/10/19

PO / BATCH NO.: P0041198 / SH9932

MATERIAL CERT REC'D: Yes  
 QUANTITY RECEIVED: 3ft  
 QUANTITY INSPECTED: 3ft  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 3.000"  
 THICKNESS RECEIVED: 3.000"  
 SHEET SIZE ORDERED: —  
 SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <u>(N)</u>	
CORRECT FINISH	<u>(Y)</u> N	
CORROSION	Y <u>(N)</u>	
CORRECT GRAIN DIRECTION	<u>(Y)</u> N	
CORRECT MATERIAL PER M-DRAWING	<u>(Y)</u> N	ASTM A681
CORRECT THICKNESS	<u>(Y)</u> N	
PHOTO REQUIRED	Y <u>(N)</u>	
CORRECT REF # TO LINK CERT	<u>(Y)</u> N	HT: 9917036508 48 4
CORRECT MATERIAL IDENTIFICATION	<u>(Y)</u> N	
CORRECT M# ON THE MATERIAL	<u>(Y)</u> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <u>(N)</u>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <u>(N)</u>	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u>	SIGNED OFF BY: _____
DATE: <u>18/10/19</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in





**NIAGARA  
LASALLE**  
CORPORATION

1412 160th Street  
Hammond IN 46327-1799

# CERTIFICATION

CERTIFICATE	Rev
H183757	3
DATE	01/05/18
PAGE	6

PURCHASE ORDER **B39144**  
ORDER **958029-1**  
CUSTOMER ITEM **V122302** ITEM **144500240Q04**  
GRADE **QT4140** SHAPE **Round**  
SIZE **4.5000** SIZE MM **114.3000 MM**  
LENGTH **20' 0" / 24' 0"** LENGTH MM **6096 / 7315.2**

4140/42 VD-CAVAL-TRT QT-HR-STRESS FREE 110K TS 85K YS (.02% 80K) 18% EL 50% R/A SURFACE BHN 289/321 Spec/Rev:  
Spec/Rev: ASME SA193/SA193M GR-B7 Spec/Rev: ASTM A193/A193M-14 GR-B7 Spec/Rev: ASTM A29/A29M-16 Spec/Rev: ASTM  
A322-13 Spec/Rev: ASTM A434-06(2012) CL-BC

HEAT		GRAIN PRACTICE		SOURCE / MELTED				CAST		REDUCTION RATIO		DI			
C141805		FINE(5-8)		STEEL DYNAMICS (USA)				BLOOM		8.8:1		5.69			
CHEMISTRY															
C	MN	P	S	SI	NI	CR	MO	CU	AL	V					
0.410	0.790	.011	.013	0.280	0.220	0.990	.210	.300	.021	.001					
N		TE	AS	PB		SE	BI	B		NB					
.008		N/A	N/A	.001		N/A	N/A	.0003		.0010					
MECHANICAL															
JOB		TENSILE		.2% YIELD		ELONG		R OF A		HARDNESS		.02% YIELD		SR TEMP	
HS46978		148,762 PSI		124,369 PSI		19.00		52.30		HBN = 285		102,042			
QUENCH & TEMPER															
JOB		MACRO		SURFACE		AUSTENITIZED			TEMPERED			STRESS			
HS46978		SATISFACTORY		HBN = 302		TEMPERATURE		TIME		QUENCH		TEMPERATURE		TIME	
						1660F		3.2 HRS		WATER		1150F		6.1 HRS	
												STRESS FREE			
HARDENABILITY															
01	02	03	04	05	06	08	10	12	14	16	20	24	28	32	
57	57	57	57	57	57	57	53	50	50	47	46	45	43	39	
LOT															
LOT		JOB		WEIGHT (LBS)		PIECES		LOT		JOB		WEIGHT (LBS)		PIECES	
5668664		HS46978		4,970		4									

WE, hereby certify that these goods were produced in compliance with all applicable requirements of sections 6, 7, and 12 of the Fair Labor Standards Act, as amended, and all regulations and orders of the United States Department of Labor issued under section 14 thereof. Material was not exposed to mercury or any metal alloy that is liquid at ambient temperature during processing or while in our possession. No weld repairs performed on the above material.

CERTIFICATE OF TEST

By:

*Walter P. Kretzler*

Walter P. Kretzler - Director of Q.A./Chief Metallurgist

## SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR  
SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT  
PART NUMBER: MT-4140QT-R (D.DDD)  
WHERE "D.DDD" = DIAMETER IN INCHES  
EG. 5/8" ROUND BAR = MT-4140QT-R0.625

REV.	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.09.12	VM	WM

<b>DART</b> AEROSPACE		PART NUMBER, DESIGN, QUANTITY	
TITLE: AISI 4140 Q&T ROUND BAR			
DWG. NO.		REV	
MT-4140QT-R		A	
DESIGN BY:	VM 8/09/2017	XXX 1 605	FRACTIONS & 1/8
DRAWN BY:	VM 03/14/2017	XX 1 1	INCHES & 1/16
CHECKED:	VM 03/14/2017	XX 1 1	SURFACES & 1/8
MFG. APPR:	DP 09/14/2017	1. DIMENSIONS ARE IN INCHES	
QA APPR:	PO 09/14/2017	2. INTERPRET DIM AND TOL PER	
APPROVED:	WM 09/14/2017	3. AFTER PLATING	
DATE:	9/14/2017	SCALE:	NTS WEIGHT 0.0 LBS
SHEET 1 OF 1			
COPYRIGHT © 2017 BY DART AEROSPACE LTD.			
THIS DOCUMENT IS UNCLASSIFIED AND IS NOT FOR RELEASE UNDER E.O. 13526			
UNLESS OTHERWISE INDICATED, ALL DIMENSIONS ARE IN INCHES AND TOLERANCES ARE AS SHOWN			

ECN 17-655

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-4140QT-R4.500

PO / BATCH NO.: P0041198/S117933

DATE: 10/10/26

MATERIAL CERT REC'D: Yes

THICKNESS ORDERED: 4.500"

QUANTITY RECEIVED: 34

THICKNESS RECEIVED: 4.500"

QUANTITY INSPECTED: 34

SHEET SIZE ORDERED: —

QUANTITY REJECTED: 0

SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	Y N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	Y N	
CORRECT MATERIAL PER M-DRAWING	Y N	
CORRECT THICKNESS	Y N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	Y N	MT: C141805
CORRECT MATERIAL IDENTIFICATION	Y N	
CORRECT M# ON THE MATERIAL	Y N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>AT</u> DATE: <u>10/10/26</u>	SIGNED OFF BY: <u>[Signature]</u> DATE: <u>76 OCT 2026</u>

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in